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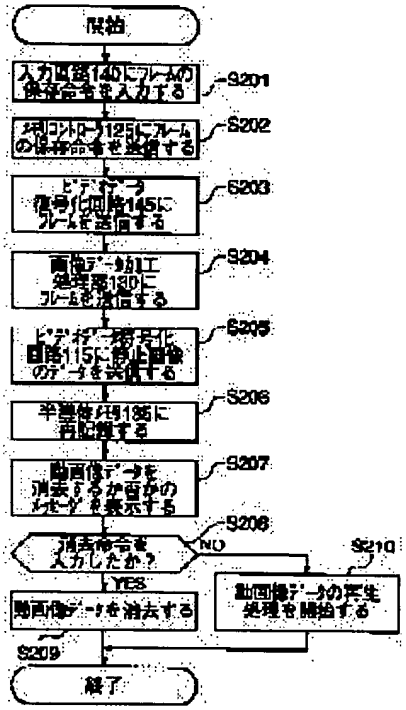
(54) DEVICE AND METHOD FOR RECORDING AND REPRODUCING IMAGE

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a device and a method for recording and reproducing images with which moving image data can be efficiently recorded.

SOLUTION: Concerning this image recording and reproducing device, frames at one part of moving image data received from a video decoding circuit are converted into still picture data and transmitted to a video data encoding circuit (step S205) by an image data working processing part, the still picture data received from the image data working processing part are encoded and recorded in a semiconductor memory again by the video data encoding circuit (step S206), a system controller discriminates whether an erasing instruction is inputted to an input circuit or not by pressing an erasing instruction button by a user later in a step S208 and when the erasing instruction is inputted to the input circuit, the moving image data as the base of still picture data are erased (step S209).



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CLAIMS DETAILED DESCRIPTION TECHNICAL FIELD PRIOR ART EFFECT OF THE INVENTION TECHNICAL PROBLEM MEANS DESCRIPTION OF DRAWINGS DRAWINGS

[Translation done.]

* NOTICES *

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Field of the Invention] This invention relates to the image recording regenerative apparatus and the image recording playback approach of performing record and playback of an image especially using semiconductor memory about an image recording regenerative apparatus and the image recording playback approach.
[0002]
[Description of the Prior Art] In the conventional image recording regenerative apparatus, the magnetic tape was used as a record medium for recording dynamic-image data.
[0003] Moreover, digitization of dynamic-image data is attained by improvement in the compression technology of dynamic-image data in recent years, and semiconductor technology, and semiconductor memory attracts attention as the record medium.
[0004] When semiconductor memory is used as a record medium, there are many merits, like that there is little power consumption, that a miniaturization can be done easily, that very high-speed random access is possible, and it is strong to vibration.
[0005]
[Problem(s) to be Solved by the Invention] However, when semiconductor memory is used for a record medium, generally there is a problem that chart lasting time is shorter than a magnetic tape.
[0006] Moreover, when exchange of a storage cannot be performed at hand in the reasons of there being no record medium for exchange, the already recorded dynamic-image data are eliminated and overwritten, or there is a problem that record of dynamic-image data must be given up.
[0007] Then, in order to solve the above-mentioned trouble, the purpose of this invention is to offer the image recording regenerative apparatus and the image recording playback approach of recording dynamic-image data efficiently.
[0008]
[Means for Solving the Problem] In order to attain the above-mentioned purpose, the image recording regenerative apparatus of claim 1 A record means to record dynamic-image data and static-image data, and the frame preservation instruction means which issues the preservation instruction of some frames of said dynamic-image data currently recorded on said record means, It is characterized by having a conversion means to change into said static-image data some frames of said dynamic-image data by which the preservation instruction was issued with said frame preservation instruction means, and an elimination means to eliminate said dynamic-image data currently recorded on said record means.
[0009] The image recording regenerative apparatus of claim 2 is characterized by said record means being semiconductor memory in an image recording regenerative apparatus according to claim 1.
[0010] The image recording regenerative apparatus of claim 3 is characterized by recording said static-image data from which said record means was changed by said conversion means in an image recording regenerative apparatus according to claim 1 or 2.
[0011] The image recording regenerative apparatus of claim 4 is characterized by said frame preservation instruction means including the switching means which issues the preservation instruction of some frames of said dynamic-image data during playback of said dynamic-image data in claim 1 thru/or the image recording regenerative apparatus of three given in any 1 term.
[0012] The image recording regenerative apparatus of claim 5 is characterized by said frame preservation instruction means including an input means to input the positional information of some frames of said dynamic-image data in claim 1 thru/or the image recording regenerative apparatus of three given in any 1 term.
[0013] The image recording regenerative apparatus of claim 6 is characterized by having a display-input means to input the positional information of some frames of said dynamic-image data in an image recording regenerative apparatus according to claim 5.
[0014] The record process on which the image recording playback approach of claim 7 records dynamic-image data and static-image data, The frame preservation instruction process of issuing the preservation instruction of some frames of said dynamic-image data recorded at said record process, It is characterized by including the conversion process which changes into said static-image data some frames of said dynamic-image data by which the preservation instruction was issued according to said frame preservation instruction process, and the elimination process which eliminates said dynamic-image data recorded at said record process.
[0015] The image recording playback approach of claim 8 is characterized by recording said static-image data changed according to said conversion process at said record process in the image recording playback approach according to claim 7.
[0016] The image recording playback approach of claim 9 is characterized by said frame preservation instruction process including the switching process which issues the preservation instruction of some frames of said dynamic-image data during playback of said dynamic-image data in the image recording playback approach according to claim 7 or 8.
[0017] The image recording playback approach of claim 10 is characterized by said frame preservation instruction process including the input process which inputs the positional information of some frames of said dynamic-image data in the image recording playback approach according to claim 7 or 8.
[0018] The image recording playback approach of claim 11 is characterized by including the display-input process which inputs the positional information of some frames of said dynamic-image data in the image recording playback approach according to claim 10.
[0019]

[Embodiment of the Invention] Hereafter, the configuration of the image recording regenerative apparatus concerning the gestalt of operation of this invention is explained, referring to drawing 1 . Drawing 1 shows the configuration of the image recording regenerative apparatus concerning the gestalt of operation of this invention.
[0020] This image recording regenerative apparatus is equipped with the video camera section 100 for inputting an image. The video camera section 100 is connected to the video-data compression coding network 115 through A/D converter 105, and the video-data compression coding network 115 is connected to the semiconductor memory 135 as the image data processing processing section 130 and the storage means as a conversion means.
[0021] The image data processing processing section 130 is connected to the input circuit 140 through the system controller 120, and the system controller 120 is connected to semiconductor memory 135 through the memory controller 125. An input circuit 140 and a system controller 120 constitute a frame preservation instruction means.
[0022] Semiconductor memory 135 is connected to the video-data decryption circuit 145. The video-data decryption circuit 145 is connected to the viewfinder 155 through D/A converter 150 while connecting with the image data processing processing section 130. A viewfinder 155 constitutes a display-input means.
[0023] The processing which each part of the image recording regenerative apparatus concerning the gestalt of operation of this invention performs hereafter is explained. The analog video signal inputted from the video camera section 100 is changed into a digital video signal by A/D converter 105.
[0024] The video-data coding network 115 performs processing of predicting coding and orthogonal transformation coding to the digital video signal changed by A/D converter 105, and transmits it to semiconductor memory 135 by processing variable length coding further as dynamic-image data by which compression coding was carried out.
[0025] Next, this dynamic-image data by which compression coding was carried out is recorded on semiconductor memory 135. The memory controller 125 controls record or read-out of semiconductor memory 135 etc., and a system controller 120 performs control of the memory controller 125 and the image data processing processing section 130 in response to it, when directions of record / playback / retrieval / frame preservation / elimination are inputted from an input circuit 140. The image data processing processing section 130 changes some frames of dynamic-image data as static-image data.
[0026] When playback of dynamic-image data is performed, the video-data decryption circuit 145 processes a variable-length decryption to the dynamic-image data currently recorded on semiconductor memory 135, and transmits it to D/A converter 150 as a digital video signal by performing processing of a prediction decryption and an orthogonal transformation decryption further. D/A converter 150 changes the transmitted digital video signal into an analog video signal, and sends it out to a viewfinder 155. A viewfinder 155 displays this analog video signal.
[0027] In addition, this image recording regenerative apparatus is equipped with the erase-command carbon button (not shown) which inputs the instruction which eliminates the dynamic-image data which became the origin of the preservation instruction carbon button (not shown) which inputs the instruction which saves some frames of dynamic-image data as static-image data, and static-image data. A preservation instruction carbon button constitutes a switching means.
[0028] Next, in this image recording regenerative apparatus, there are two arts which save some frames of dynamic-image data as static-image data.
[0029] Drawing 2 shows the program of one art which saves some frames of dynamic-image data as static-image data.
[0030] first, under playback of dynamic-image data -- a user -- a preservation instruction carbon button -- depressing -- carrying out -- an input circuit 140 -- the preservation instruction of some frames of dynamic-image data -- inputting (step S201) -- a system controller 120 interrupts regeneration of dynamic-image data, and the preservation instruction of some frames of dynamic-image data is transmitted to the memory controller 125 (step S202).
[0031] The memory controller 125 transmits some frames of the dynamic-image data of the frame currently displayed on the current viewfinder 155 from semiconductor memory 135 to read-out and the video-data decryption circuit 145 with the preservation instruction of some frames of this dynamic-image data (step S203). The video-data decryption circuit 145 decrypts some frames of dynamic-image data received from semiconductor memory 135, and transmits them to the image data processing processing section 130 (step S204).
[0032] The image data processing processing section 130 changes into static-image data some frames of dynamic-image data received from the video-data decryption circuit 145, and transmits to the video-data coding network 115 (step S205). the static-image data which the video-data coding network 115 received from the image data processing processing section 130 -- encoding -- semiconductor memory 135 -- re--- it records [that is,] and saves (step S206). Thus, by processing, it becomes possible to save some frames of dynamic-image data as static-image data.
[0033] After the processing saved as static-image data at semiconductor memory 135 is completed, the message of whether to eliminate the dynamic-image data which it was under static-image data is displayed on a viewfinder 155 (step S207).
[0034] Then, in step S208, when a user depresses and does an erase-command carbon button, it distinguishes whether the erase command was inputted into the input circuit 140 with a system controller 120. When an erase command is inputted into an input circuit 140 at this time, while eliminating the dynamic-image data which became the origin of static-image data (step S209) and ending this processing, when the erase command is not inputted, again, a system controller 120 starts regeneration of dynamic-image data (step S210), and ends this processing.
[0035] As mentioned above, according to one art of the gestalt of operation of this invention, this image recording regenerative apparatus under playback of dynamic-image data -- a user -- a preservation instruction carbon button -- depressing -- carrying out -- an input circuit 140 -- the preservation instruction of some frames of dynamic-image data -- inputting (step S201) -- Some frames of dynamic-image data are changed into static-image data in the image data processing processing section 130. To semiconductor memory 135, record [re-], i.e., when it saved (step S206) and an erase command is inputted into an input circuit 140 after that By that (step S209) which eliminates the dynamic-image data which became the origin of static-image data, unnecessary dynamic-image data can be eliminated leaving required static-image data, and dynamic-image data can be recorded efficiently.
[0036] Moreover, the amount of dynamic-image data recordable on semiconductor memory 135 as a result and static-image data is increased, or it becomes possible to make it extend the chart lasting time of dynamic-image data.
[0037] Next, drawing 3 shows the program of other one art which saves some frames of dynamic-image data as static-image data.
[0038] A user inputs beforehand into the input circuit 140 as an input means the location of the frame used as static-image data (step S301). However, a user chooses the frame which wants to display [frame] the list of each frame of dynamic-image data on a viewfinder 155, and

to use it as static-image data from the inside, and the approach of an input may enable it to input it from a viewfinder 155.
[0039] Then, if the instruction of the purport which uses the 30th frame as static-image data, for example from the start of dynamic-image data is inputted into an input circuit 140, a system controller 120 will acquire and hold the positional information (the 30th) of a frame from an input circuit 140 (step S302). A system controller 120 can hold the positional information of two or more frames. Therefore, when the instruction of the purport which also uses the 15th frame of dynamic-image data as static-image data further is inputted into an input circuit 140 after the user inputted into the input circuit 140 the instruction of the purport which uses the 30th frame as static-image data, as for a system controller 120, the positional information (the 30th and the 15th) of these two frames is held.
[0040] A system controller 120 will transmit the preservation instruction of a static image, and the positional information of the frame currently held to the memory controller 125, if the preservation instruction of some frames of the dynamic-image data from the input circuit 140 by the user is received when holding the positional information of a frame (step S303).
[0041] The memory controller 125 receives the preservation instruction of some frames of dynamic-image data, and the positional information of a frame, and transmits some frames of the dynamic-image data corresponding to the positional information of a frame to read-out and the video-data decryption circuit 145 from semiconductor memory 135 (step S304). The video-data decryption circuit 145 decrypts some frames of dynamic-image data received from semiconductor memory 135, and transmits them to the image data processing processing section 130 (step S305).
[0042] The image data processing processing section 130 changes into static-image data some frames of dynamic-image data received from the video-data decryption circuit 145, and transmits to the video-data coding network 115 (step S306).
[0043] the static-image data which the video-data coding network 115 received from the image data processing processing section 130 -- encoding -- semiconductor memory 135 -- re--- it records [that is,] and saves (step S307). Thus, by processing, it becomes possible to save some dynamic-image data as static-image data.
[0044] After the processing saved as static-image data at semiconductor memory 135 is completed, the message of whether to eliminate the dynamic-image data which it was under static-image data is displayed on a viewfinder 155 (step S308).
[0045] Then, in step S309, when a user depresses and does an erase-command carbon button, it distinguishes whether the erase command was inputted into the input circuit 140 with a system controller 120. When an erase command is inputted into an input circuit 140 at this time, while eliminating the dynamic-image data which became the origin of static-image data (step S310) and ending this processing, when the erase command is not inputted, this processing is ended without doing anything.
[0046] Hereafter, above-mentioned drawing 2 and the art of drawing 3 are concretely explained with reference to drawing 4 .
[0047] Drawing 4 (a) shows nine frames of dynamic-image data, and drawing 4 (b) shows the frame used as static-image data.
[0048] Among nine frames of the dynamic-image data of drawing 4 (a), when the preservation instruction of the 7th frame is inputted into an input circuit 140 from the top in drawing 4 (a) to the 2nd frame, and a top, these two frames are changed into static-image data in nine frames, and it is saved as static-image data at semiconductor memory 135 (drawing 4 (b)). Other seven frames excluding the 7th frame from on the top in drawing 4 (a) to the 2nd frame are eliminated when a user inputs an erase command into an input circuit 140.
[0049] As mentioned above, according to other one art in the gestalt of operation of this invention, this image recording regenerative apparatus When a user inputs beforehand into an input circuit 140 the location of the frame used as static-image data (step S301) and the system controller 120 holds the positional information of a frame If the preservation instruction of some frames of the dynamic-image data from the input circuit 140 by the user is received The image data processing processing section 130 changes some frames of dynamic-image data into static-image data. To semiconductor memory 135, record [re-], i.e., when it saved (step S307) and an erase command is inputted into an input circuit 140 after that By that (step S310) which eliminates the dynamic-image data which became the origin of static-image data, unnecessary dynamic-image data can be eliminated leaving required static-image data, and dynamic-image data can be memorized efficiently.
[0050] Moreover, the amount of dynamic-image data recordable on semiconductor memory 135 as a result and static-image data is increased, or it becomes possible to make it extend the chart lasting time of dynamic-image data.
[0051]
[Effect of the Invention] As explained to the detail above, according to the image recording regenerative apparatus of claim 1 A conversion means changes into static-image data some frames of the dynamic-image data by which the preservation instruction was issued with the frame preservation instruction means. When the static-image data from which the record means was changed by the conversion means are recorded and an elimination means eliminates dynamic-image data, unnecessary dynamic-image data can be eliminated leaving required static-image data, and dynamic-image data can be recorded efficiently.
[0052] According to the image recording playback approach of claim 7, some frames of the dynamic-image data by which the preservation instruction was taken out with the frame preservation instruction process are changed into static-image data at a conversion process. By memorizing the static-image data changed according to the conversion process at the record process, and eliminating dynamic-image data at an elimination process, unnecessary dynamic-image data can be eliminated leaving required static-image data, and dynamic-image data can be recorded efficiently.

[Translation done.]